



Widening Access to Virtual Educational Scenarios

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Exemplar implementations – OL3 and CASUS

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1 INTRODUCTION

This deliverable reports on the development of exemplar implementations/integrations of Virtual Scenario systems within LMS/MOOC systems.

There are a range of different LMS and MOOC platforms available, all with unique characteristics and features that mean there is no “one-size fits all” solution for integrating systems. The goal of the WAVES project and this deliverable is to provide guidance using exemplar systems and established standards in order to provide a knowledge base that the community can use with any system that supports that standard.

2 THE LTI STANDARD

The key standard that has been identified to use for system integration is Learning Tools Interoperability (LTI). This standard was developed by the IMS Global Learning Consortium, and has been widely adopted by educational systems as a straightforward way to integrate activities into a learning environment in a way that is transparent to end users.

LTI allows learning activities that provide specialised functionalities specific to that activity and platform to be integrated into general learner-facing environments such as Learning Management Systems (LMS), Virtual Learning Environments (VLEs), portals and repositories. In the LTI standard, the specialised learning applications are known as “Tools” (delivered by Tool Providers), and the general learning platforms are known as “Tool Consumers”. By integrating a tool into a tool consumer, it allows the functionality of that tool consumer to be effectively expanded to incorporate that of the tool, in a way that is transparent to the end user or learner and which does not require learners to maintain a separate account or login for both the tool provider and the tool.

3 EXEMPLAR INTEGRATIONS

This section describes the series of created exemplar integrations, detailing the configuration required in both the tool (the specialised learning activity - in these cases OpenLabyrinth and Casus) and the tool consumer (the LMS or MOOC platform). Due to the standardised nature of LTI, the configuration steps outlined for any tool are also able to be applied to any conformant tool provider, and vice versa, meaning that these exemplars provide guidance for combinations of tools and tool consumers beyond the specific combinations and systems listed.

3.1 OL3 Integrations

D2.4. Exemplar implementations – OL3 and CASUS

The integrations in this section focus on OpenLabyrinth as the tool in the LTI specification, with different platforms as the tool consumer.

OpenLabyrinth is an open source Virtual Scenario platform, which is freely available under a GNU-GPL3 licence. The version of OpenLabyrinth used in this exemplar is version v3.4, which is the most recent version currently available.

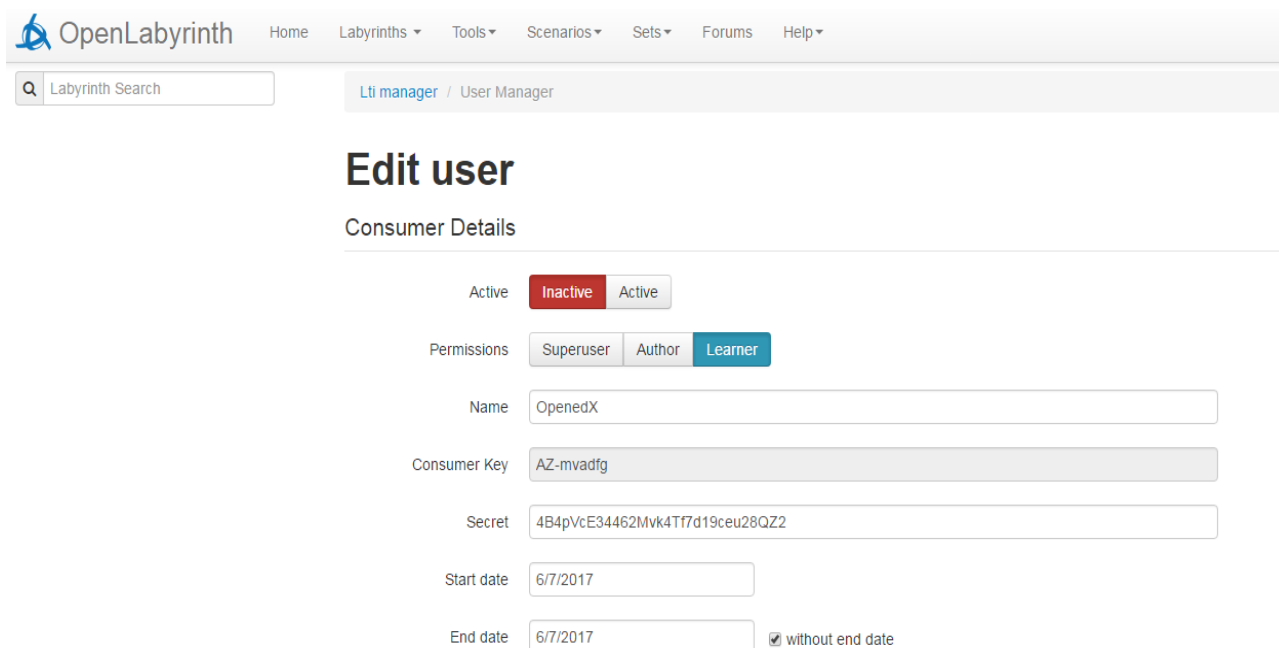
3.1.1 OpenLabyrinth integrated into OpenEdX

OpenEdX (<https://open.edx.org/>) is an open source MOOC platform, which is freely available in a modular structure under the terms of an Apache and AGPL licence. The platform was developed for and provides the underpinning infrastructure for the EdX platform, which was founded by Massachusetts Institute of Technology and Harvard University in 2012.

The process for linking OpenLabyrinth v3.4 to the OpenEdx platform using the LTI standard can be summarised in the following steps:

- In OL 3, access the LTI manager that can be found under the “Tools” menu by selecting the LTI option. This will take you to the Consumers manager, where you should select “Add a consumer”. This will take you to a screen in which you can enter relevant details such as a username, and when you save these changes the Consumer user will be created. It is important when creating a consumer that you use the right access level for your intended purpose so that the access matches the level in your Tool Consumer system. For example, if you intend learners in OpenEdX to access OpenLabyrinth, your LTI consumer in OpenLabyrinth must also be a learner.
- The user can be edited further and details configured and modified by selecting the “Edit” button next to the LTI user in the LTI manager. This will take you to a configuration screen (Figure 1) in which you will also be able to see the system-configured “Consumer key” and “secret” that is necessary to set up the LTI link in the Tool Provider.

D2.4. Exemplar implementations – OL3 and CASUS



The screenshot shows the OpenLabyrinth web interface. The top navigation bar includes links for Home, Labyrinths, Tools, Scenarios, Sets, Forums, and Help. Below the navigation bar is a search bar labeled 'Labyrinth Search' and a breadcrumb trail 'Lti manager / User Manager'. The main heading is 'Edit user'. Underneath, the 'Consumer Details' section contains several fields:

- Active:** A toggle switch currently set to 'Inactive' (red) with an 'Active' (grey) option.
- Permissions:** Three buttons: 'Superuser' (grey), 'Author' (grey), and 'Learner' (blue).
- Name:** A text input field containing 'OpenedX'.
- Consumer Key:** A text input field containing 'AZ-mvadfg'.
- Secret:** A text input field containing '4B4pVcE34462Mvk4Tf7d19ceu28QZ2'.
- Start date:** A date input field containing '6/7/2017'.
- End date:** A date input field containing '6/7/2017' with a checkbox labeled 'without end date' that is checked.

Figure 1 Configuration of LTI in the OpenLabyrinth system

- To activate the LTI module in the advanced settings of the course in OpenEdx, in the “Policy value” field of the settings page, you should add the parameters [“lti” , “lti_consumer”].
- In the “LTI passport” field within the advanced settings in OpenEdx you should insert the generated values from OL 3 in the format: "id:consumer_key:secret", where the lti id is an extra parameter included in OpenEdx that can maintain any value; its role is to label the integrated component and bind the values of key and secret.
- Within a course unit in OpenEdX, select the functionality to insert an LTI component. In the configuration settings (Figure 2), insert the launch url and the id as they had been configured for your LTI consumer in OpenLabyrinth.

D2.4. Exemplar implementations – OL3 and CASUS

The screenshot shows the 'Editing: LTI' dialog box in the edX Studio interface. The dialog contains the following fields and values:

- graded:** True (with a dropdown arrow and a refresh icon)
- has_score:** True (with a dropdown arrow and a refresh icon)
- launch_url:** http://ec2-54-194-154-11.eu-west-1.compute.a... (with a refresh icon)
- lti_id:** lti_olab (with a refresh icon)

At the bottom of the dialog are 'Save' and 'Cancel' buttons. The background of the screenshot shows the edX Studio interface with the text 'You are editing a draft' and 'Open Labyrinth' buttons.

Figure 2 Creating an LTI component within the course

- The OpenLabyrinth VP should then be accessible from within your course unit in OpenEdX.

D2.4. Exemplar implementations – OL3 and CASUS

Figure 3 An OpenLabyrinth Virtual Scenario embedded into OpenEdX using LTI

3.1.2 OpenLabyrinth integrated into FutureLearn

The FutureLearn platform (<https://www.futurelearn.com/>) is a widely used platform for delivering MOOC content. It was founded by the Open University, and currently has more than 6 million learners registered to the platform.

The FutureLearn infrastructure is closed source, and is not made available for self-hosting. Access to basic administration of the platform and courses is available only to people affiliated to institutions or organisations that are registered partners of FutureLearn. Additional “superuser” access that gives access to high level administrative functions is limited to select FutureLearn employees and staff, and is organised by arrangement and collaboration with partner institutions.

D2.4. Exemplar implementations – OL3 and CASUS

The FutureLearn platform supports the LTI standard and initial testing has been done to confirm that integration is possible. This is done by setting up specified technical details on the OpenLabyrinth system (an LTI User, Consumer Key, Shared secret and base URL - set up as shown in the integration of OpenLabyrinth into OpenEdX above) and providing these to FutureLearn. FutureLearn are then able to set up an “Exercise step” (creating these requires FutureLearn superuser access limited to FutureLearn staff) which can launch OpenLabyrinth as an LTI activity within FutureLearn.

A key item to note is the nature of the URL used as the base URL in order for the integration to take place. If the main home page URL of the OpenLabyrinth system is used, then the learner will be presented with the main index page, and will be able to choose from a list of available cases that are open and accessible.

The preferred solution is to use a direct link to the first node of the VS case as the base URL for the VP case. When learners in the FutureLearn platform then launch the exercise step they will be taken directly to the first node of the case and be able to use the case without needing to navigate there in the OpenLabyrinth system. The learners will be authenticated automatically as the LTI user.

The screenshot shows a web interface for a FutureLearn exercise. At the top, a header bar contains a logo on the left, the text 'WIDENING ACCESS TO VIRTUAL EDUCATIONAL SCENARIOS ST GEORGE'S, UNIVERSITY OF LONDON' in the center, a bell icon on the right, and a pink 'LW' button. Below the header is a navigation bar with three items: 'To do' with a checkmark icon, 'Activity' with a circular arrow icon, and 'Progress' with a circular arrow icon. The main content area has a box on the left with the number '3.6' and a progress indicator on the right stating 'YOU'VE COMPLETED 0 STEPS IN WEEK 3'. The title 'Test Open Labyrinth' is displayed in large, bold, black text. Below the title is the subtext 'Let's see what happens'. A paragraph follows: 'Please note, by launching the exercise you will be taken to a page containing content provided by a third party website.' Below this is a large dark grey rectangular box containing the word 'EXERCISE' in small white capital letters, the title 'Test Open Labyrinth' in large white text, and a pink 'Launch' button. At the bottom left, there is a comment icon and the text '0 comments'. At the bottom right, there is a pink circular button with the text 'Mark as complete'.

WIDENING ACCESS TO VIRTUAL EDUCATIONAL SCENARIOS ST GEORGE'S, UNIVERSITY OF LONDON

To do Activity Progress

3.6 YOU'VE COMPLETED 0 STEPS IN WEEK 3

Test Open Labyrinth

Let's see what happens

Please note, by launching the exercise you will be taken to a page containing content provided by a third party website.

EXERCISE

Test Open Labyrinth

Launch

0 comments

Mark as complete

Figure 4 Screenshot of a FutureLearn exercise step that launches OpenLabyrinth as an LTI activity

D2.4. Exemplar implementations – OL3 and CASUS

[Back to course](#)

WIDENING ACCESS TO VIRTUAL... ST GEORGE'S, UNIVERSITY OF LONDON

Introduction

You are the doctor doing a busy afternoon chest clinic. It is a general chest clinic with a mixture of follow ups and new patients. Your consultant is in the room next to yours, and you can ask his advice if necessary. There are some investigations whose results will be immediately available (such as spirometry, chest X-ray or arterial blood gases), but others will not be available until the next time you see the patient (CT chest, blood tests, nuclear medicine investigations).

It is important that you assess each patient and arrange appropriate investigations, make a management plan and arrange follow up. Some patients will be more complex than others, but it is important that you prioritise appropriately, and avoid the clinic running late.

[Start](#)

Map: AVP Virtual Chest Clinic (630)
Node: 10832
Score:

[suspend](#)

reset

Font Family Font Sizes

[p](#) Words: 0

OpenLabyrinth powered by

OpenLabyrinth is an open source educational pathway system

Figure 5 Screenshot of an OpenLabyrinth activity embedded in FutureLearn

3.2 CASUS Integrations

The integrations in this section focus on CASUS as the tool in the LTI specification, with different platforms as the tool consumer. CASUS is a commercially developed Virtual Scenario platform, which was created at Ludwig-Maximilians University in Munich and which has been developed by Instruct AG.

3.2.1 CASUS integrated into Moodle

This integration focuses on Moodle as the Tool Consumer in the LTI specification. Moodle (<https://moodle.org/>) is a widely used learning platform globally, that supports more than an estimated 90 million learners across tens of thousands of learning environment instances. Moodle is freely available as an open source project under a GNU-GPL3 licence.

The process for integrating CASUS into a Moodle installation is described below.

- **Administrator Setup** - The necessary steps to setup CASUS as an LTI plugin only has to be done once, so there is no graphical user interface for this. Instead one single record in the database has to be added. The information absolutely needed for LTI is an Identifier or Name of the LTI integration + a shared secret. Also the LTI enabling needs to include a CASUS “group” (equivalent to client or institution) in Moodle. LTI setup is done within the administration panels in Moodle and requires details of the “Consumer key”, shared secret and the base URL, all of which are obtained within the CASUS system. The base URL is more or less fixed, with the only changes occurring in the subdomain used.

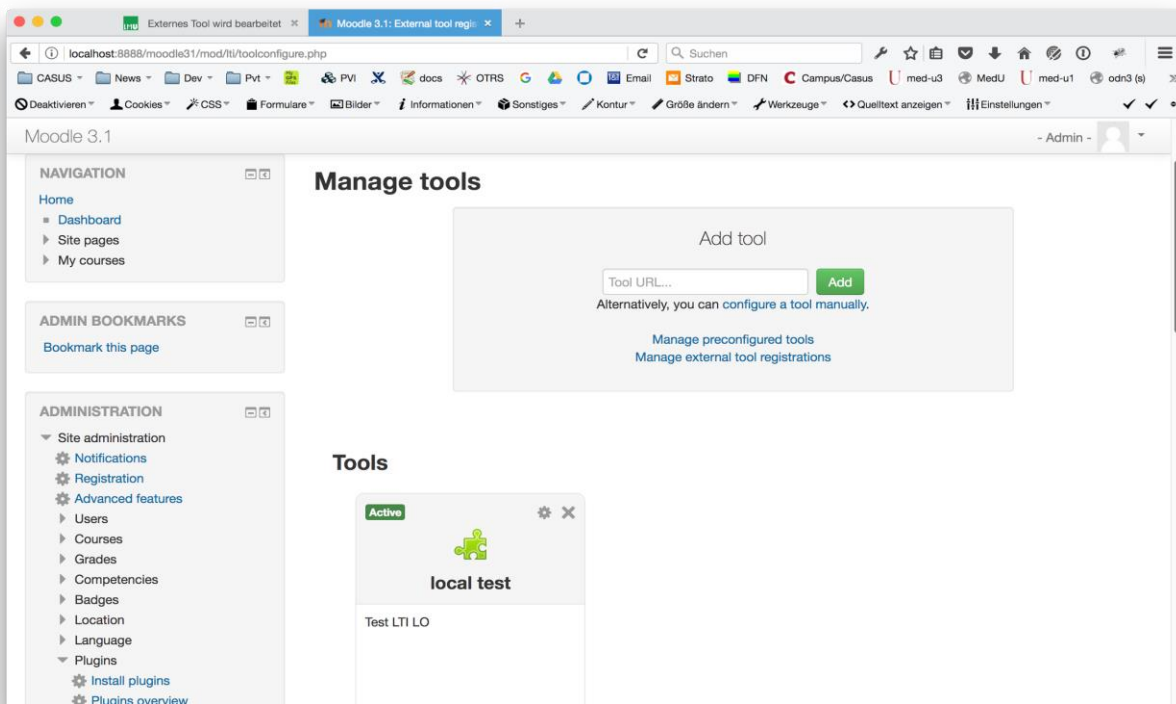


Figure 6 Screenshot showing Moodle "Manage Tools" screen

D2.4. Exemplar implementations – OL3 and CASUS

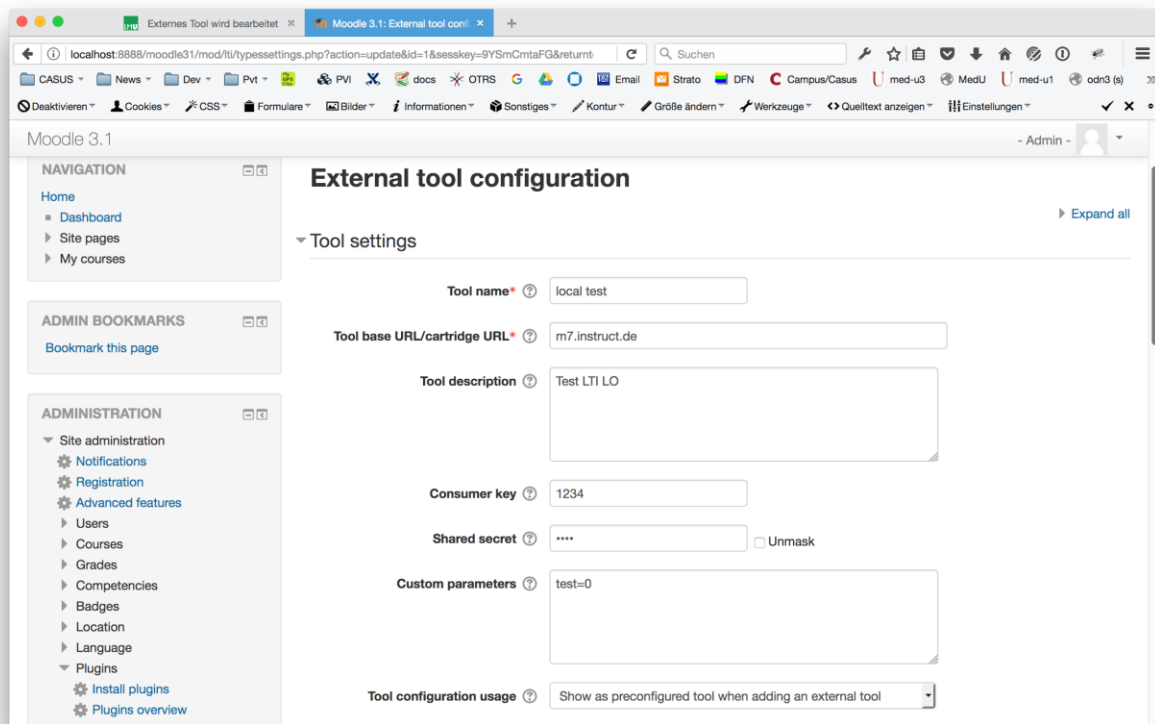


Figure 7 Screenshot showing Moodle LTI tool configuration screen

- Having established the plugin in Moodle the administration side is completed. From that moment on, if correctly set up, the user can create user links as described in the Development plan D2.1, a task identified as a key use case.
- In order to set up the integration it is necessary to have the correct access permissions; on the CASUS side the course manager role is required, which enables users to create/edit courses. On the Moodle side the user needs the possibility to generate Moodle activities.
- Having completed the administration steps above, multiple links to CASUS resources can be created within the Moodle installation. In order to create a link in Moodle to a CASUS resource, the following steps should be followed:
 - Create a CASUS course and include the wanted cases
 - If LTI is enabled for the client (as described above), the course manager in CASUS will display an LTI section. This section contains a ready to go set of encrypted parameters which can be copied and pasted over to Moodle.
 - Once the relevant encrypted parameter has been copied – this can be either the entire course or just one particular case within the course - the course manager can go now to a Moodle course and add an “activity”.
 - If correctly set up a separate activity should be selectable
 - Within that activity, all necessary base parameters should already be ok, so the only setup needed is to paste the copied parameters from CASUS into the Moodle fields.
 - Please note: CASUS will open cases in a separate window, rather than as a frame within the Tool Consumer system.

D2.4. Exemplar implementations – OL3 and CASUS

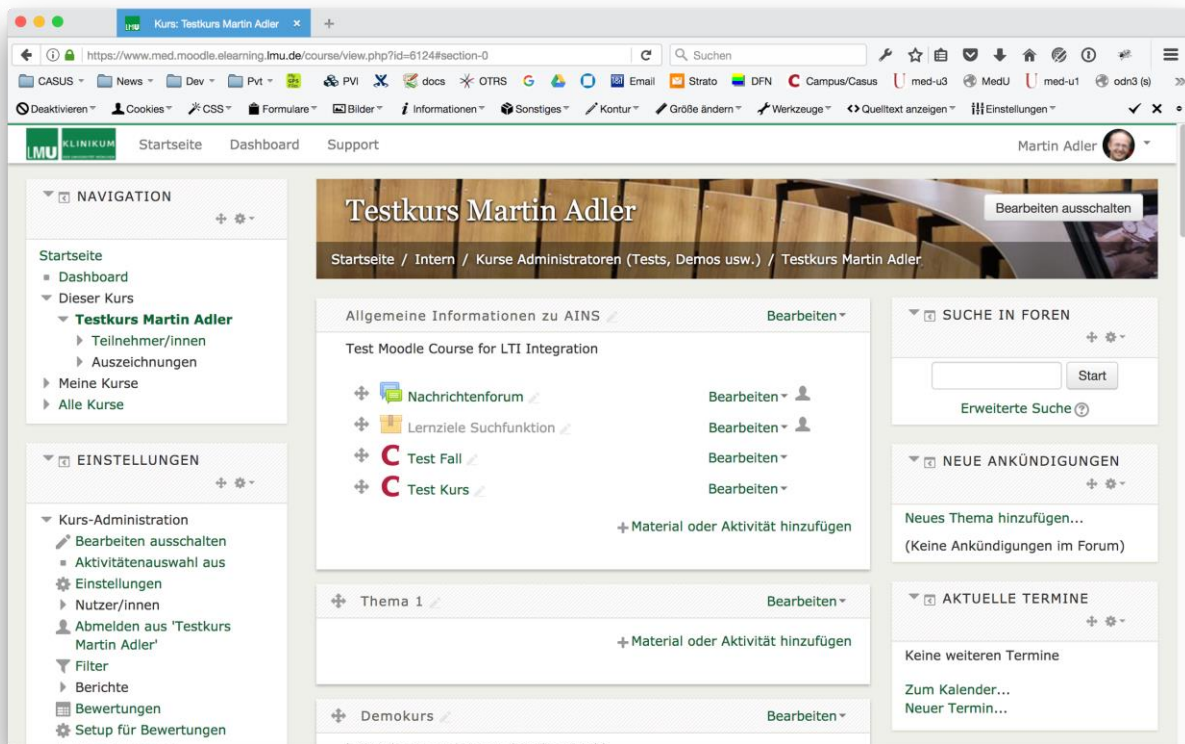


Figure 8 Screenshot showing LTI links to Casus in Moodle

D2.4. Exemplar implementations – OL3 and CASUS

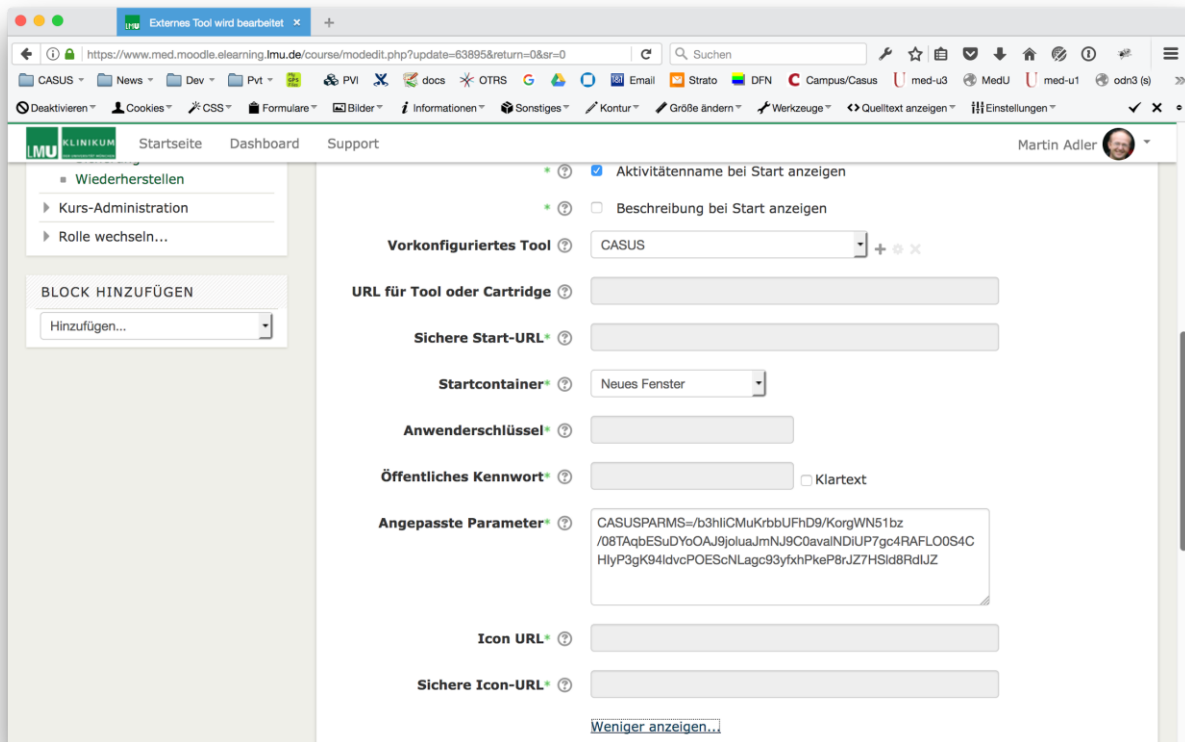


Figure 9 Screenshot showing configuration screen for LTI links in Moodle

Within the encrypted parameters copied from CASUS additional information such as the creation date of the linked parameters or the CASUS version are encoded. For this reason, each link will look unique, even if two links are to the same course and case. This can be confusing for the user and is under consideration for being improved in the future.

For error checking, debugging and testing purposes, each call from Moodle to CASUS is logged in detail to the database including the entire encrypted string.

The exemplar integration was tested in a live production system in March and April 2017 with University of Munich. The reason for implementing this in the live system was that the University of Munich updated to a new Moodle version, and no longer wished to use the old integration protocol SCORM AICC/HACP. Around 100 links were changed to LTI, with no major issues encountered in the given timeframe. However, the following conceptual information was revealed to be of interest and relevant for this exemplar integration:

- LTI is NOT an identity management solution. Usually in such integrations, LTI users are regarded as external users with possibility to login directly into the VS system. LMU however has a hybrid approach, which made some additional configuration possibilities necessary. A federated identity management (DFNAAI - Shibboleth based) is likely to be considered in future.

D2.4. Exemplar implementations – OL3 and CASUS

- LTI relies on shared secrets being kept confidential, which has to be negotiated. If these are not kept confidential, it opens the unavoidable possibility that someone could gain unauthorised access to the system using this information.
- LTI with Moodle can provide Moodle roles and relevant access permission profiles. With proper planning on the administration side and exchange of role profiles, as well as mapping Moodle roles to CASUS roles, more sophisticated authorization could be enabled.

Following the implementation at LMU, we concluded that moving to LTI links at LMU was a success and was straight forward. Minor UX improvements can be planned to improve the process further. In a second phase the links to the CASUS module “Learning objectives” were changed as well.

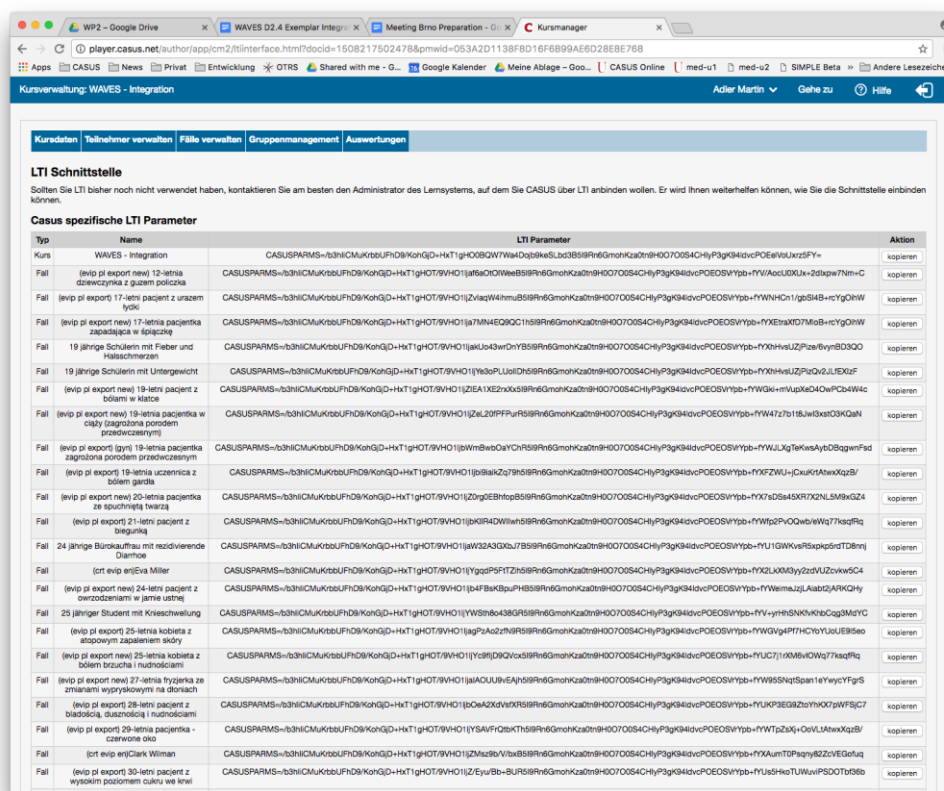
3.2.2 CASUS integrated into FutureLearn

Integration FutureLearn to CASUS was completed in October of 2017. The strict access control of FutureLearn led to a long process of discussion before we could identify the solution for integration. Thanks to the very helpful FutureLearn team we were finally able to get our own sandbox test environment, which helped us to work on and complete the task.

The process of implementing the integration is very similar to the process with Moodle described above. However, the following details the major differences between the two integrations:

- Moodle allows passing an extra application specific parameter in an extra field “custom parameter”. Moodle takes care of passing this parameter within the HTTP POST with all encryption necessary. FutureLearn only accepts a complete URL, so encryption has to be different from the custom parameter for Moodle, especially as any “+” characters within the URL are then handled as spaces, while Moodle automatically encrypts the “+” signs to “%2b”. The CASUS team has to think about changing the page for the LTI setup in future in order to allow different variants.

D2.4. Exemplar implementations – OL3 and CASUS



The screenshot shows a web browser window with the URL `player.casus.net/author/app/cm2/interface.htm?docid=1508217502478&pmwid=053A2D1138FBD16F6899AE6D28E8768`. The page title is "Kursverwaltung: WAVES - Integration". The main content area is titled "LTI Schnittstelle" and contains a table of LTI parameters for copying. The table has four columns: "Typ", "Name", "LTI Parameter", and "Aktion". The "Name" column lists various CASUS-specific parameters, and the "LTI Parameter" column contains the corresponding LTI URL. The "Aktion" column has a "kopieren" (copy) button for each row.

Typ	Name	LTI Parameter	Aktion
Kurs	WAVES - Integration	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export new) 12-letnia dziewczynka z guzem policzka	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 17-letni pacjent z urazem tyłu	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 17-letnia pacjentka zapadająca w śpiączkę	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	19-jährige Schülerin mit Fieber und Halsentzündung	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	19-jährige Schülerin mit Untergewicht	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export new) 19-letnia pacjentka z bólem w klatce	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 19-letnia pacjentka zagrożona porodem przedwczesnym	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 19-letnia uczennica z bólem gardła	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 20-letnia pacjentka ze suchotną twardzi	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 21-letni pacjent z biegunką	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	24-jährige Blockflöte mit rezidivierender Diphtherie	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(ort evip) eniEva Miller	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export new) 24-letnia pacjentka z owozodami w jamie ustnej	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	25-jähriger Student mit Kniebeschwerden	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 25-letnia kobieta z astmowym zapaleniem oskrzeli	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export new) 25-letnia kobieta z bólem brzucha i nudnościami	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 27-letnia pacjentka ze zranieniami wypraskawymi na dłoniach	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 28-letni pacjent z biegunką, dusznością i nudnościami	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 29-letnia pacjentka - chorego psa	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(ort evip) eniClark Wilman	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren
Fall	(evip pl export) 30-letni pacjent z wysokim poziomem cukru we krwi	CASUSPARMS=tb3hICMuKbUfD8/KonQD=HxT1gHOT/9VHO1jaf5aOIOWeB5B9R6GmohKzadn8H0070054CHyP3gK4dvcPOEOSVYpb=FYVAcUJXJk=2dixw7m+C	kopieren

Figure 10 Page for Copying the casus specific parameters in CASUS course manager

- Moodle allows displaying of LTI links in extra windows, whereas FutureLearn only displays content in an iframe. CASUS does not support running in an iframe well, and in some of the POST requests the target is the window, so the iframe would disappear anyway. We decided to reopen the popup window support with an extra link in case popups are blocked by the users' browser. We might improve that part in terms of usability in the future.

The challenges we encountered with the FutureLearn integration might be the same as in other systems which do not follow the very structured Moodle approach with custom parameters. Being aware of this and potentially selecting "known" hosting systems on the course manager page while giving clear and specific instructions will help less technically experienced learners to generate and set up links correctly.

The CASUS team overall thinks that the Moodle approach serves the needs of inexperienced users better, as it can hide the entire administration setup by instead issuing a "shared secret" to the course creator. Giving out shared secrets to multiple additional individuals can be problematic, so access permissions which deal with encryption and the issuing of "shared secrets" should be ideally restricted to selected staff members with an understanding of the implications of sharing this information.

D2.4. Exemplar implementations – OL3 and CASUS

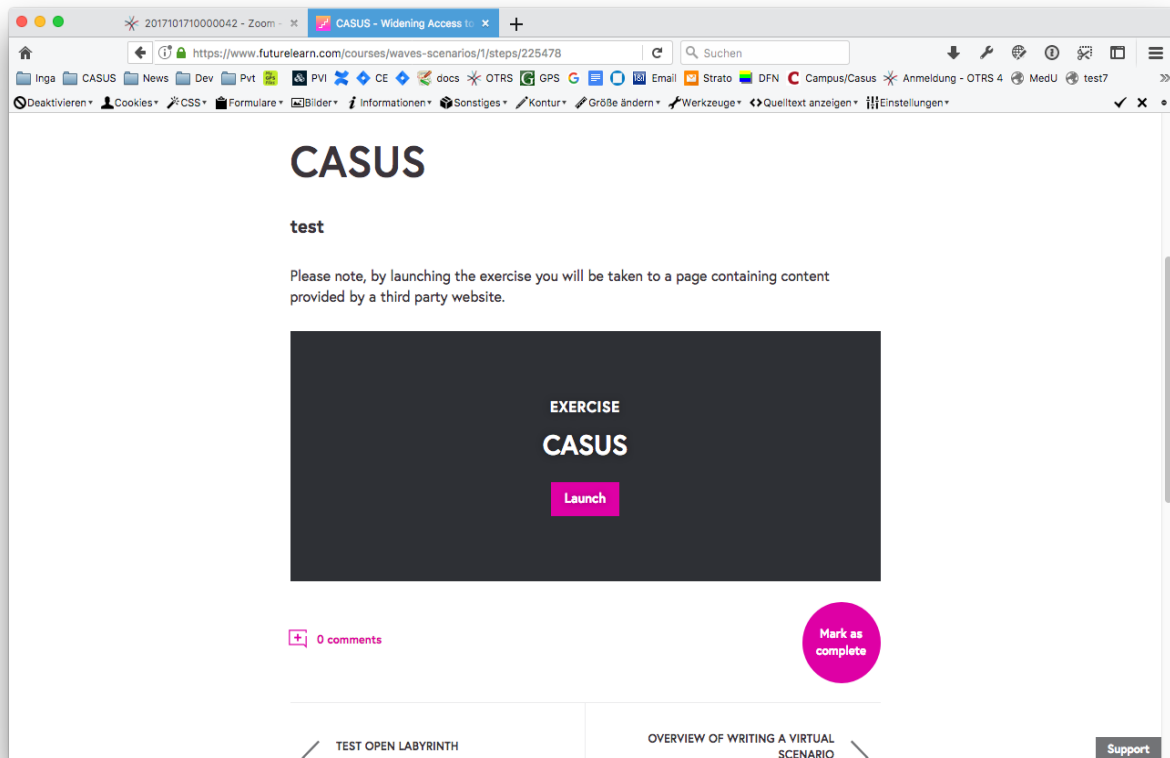


Figure 11 Screenshot showing a link to a CASUS LTI activity in FutureLearn

D2.4. Exemplar implementations – OL3 and CASUS

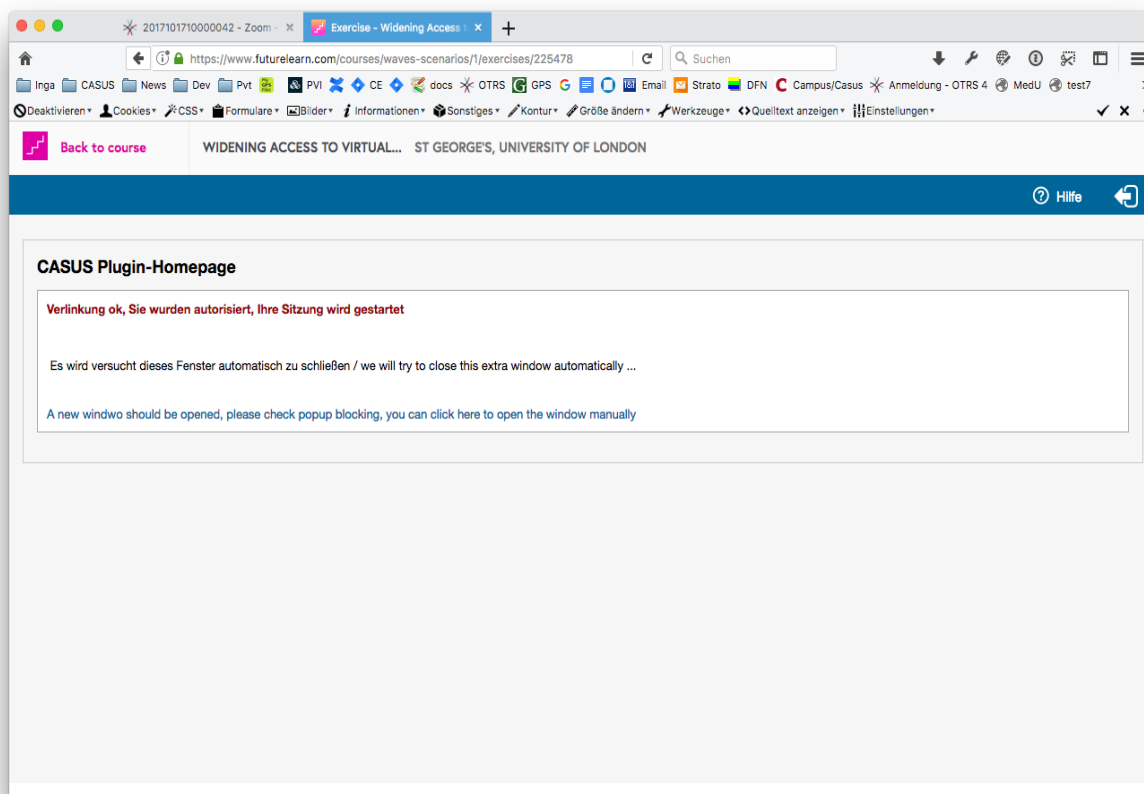


Figure 12 Screenshot showing landing page for LTI links (and other integrations) in CASUS, embedded into FutureLearn

D2.4. Exemplar implementations – OL3 and CASUS

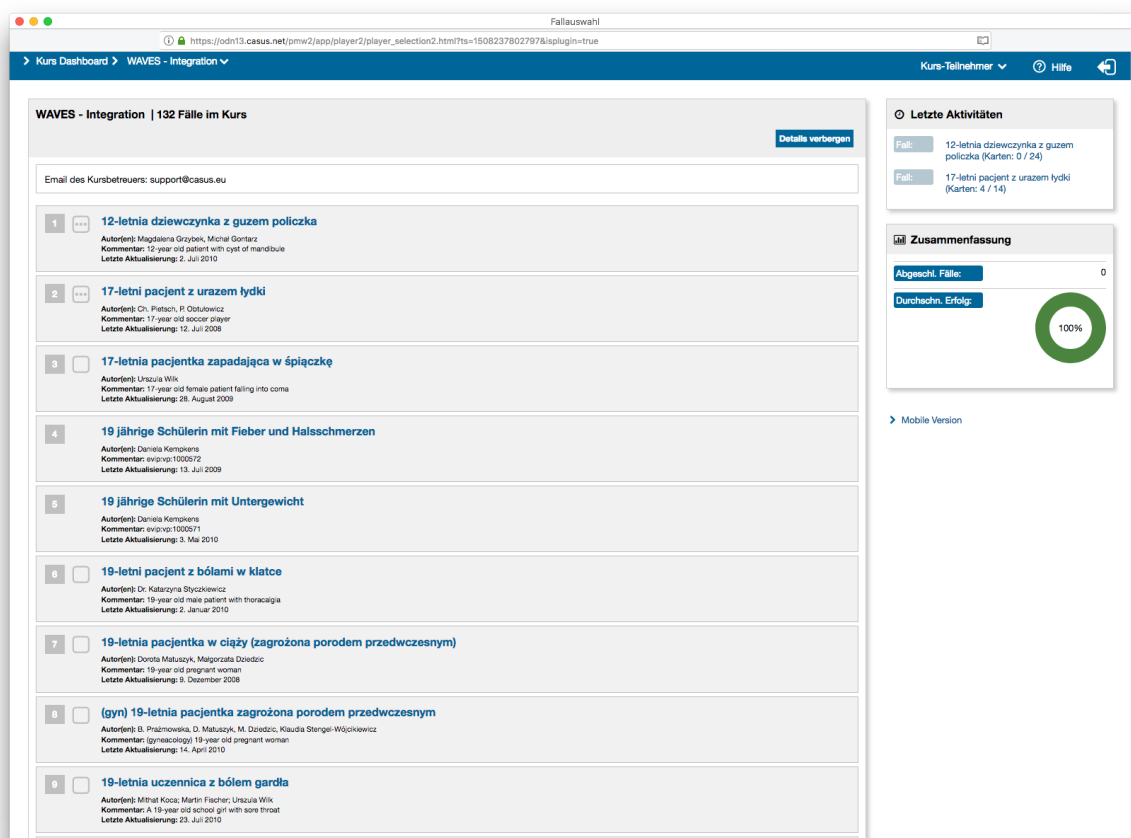


Figure 13 Opened CASUS course in a new popup opened either automatically or manually with the link on the landing

4 BIBLIOGRAPHY

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